

GenCore version 5.1.3  
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OM protein - protein search, using sw model

Run on: October 11, 2002, 08:18:40 ; Search time 10 Seconds  
(without alignments)  
503.354 Million cell updates/sec

Title: US-09-818-954A-1  
Perfect score: 722  
Sequence: 1 MKLAFLEFGPMALLLAGVG.....VAIRDCGACSTATTECEFI 130

Scoring table: BL0SUM62  
Gapop 10.0 , Gapext 0.5

Searched: 105224 seqs, 38719550 residues  
Total number of hits satisfying chosen parameters: 105224

Minimum DB seq length: 0  
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%  
Maximum Match 100%  
Listing first 45 summaries

Database : SwissProt\_40:\*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

## SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	213.5	29.6	149	1	GTH2_CLUPA
2	210	29.1	141	1	LSHB_BOVIN
3	209	28.9	140	1	GTH2_CARAU
4	209	28.9	144	1	GTH2_CYPCA
5	207	28.7	141	1	GTH2_HYPMO
6	207	28.7	146	1	GTH2_CITID
7	204	28.3	138	1	GTH2_CLAGA
8	202.5	28.0	141	1	LSHB_SHEEP
9	201.5	27.9	140	1	GTH2_ANGAN
10	201	27.8	142	1	GTH2_ONCKE
11	199	27.6	136	1	GTH2_FUNHE
12	198	27.4	113	1	GTHB_MURCI
13	197	27.3	115	1	GTH2_THUOB
14	196	27.1	107	1	FSHB_RANCA
15	192	26.6	142	1	GTH2_ONCMA
16	189	26.2	112	1	LSHB_RANCA
17	189	26.2	139	1	GTH2_MORSA
18	186.5	25.8	142	1	GTH2_MORSA
19	186.5	25.8	169	1	LSHB_EOUBU
20	184.5	25.6	169	1	LSHB_EDUAS
21	184	25.5	142	1	GTH2_ONCTS
22	184	25.5	146	1	GTH2_TRITC
23	183.5	25.4	169	1	LSHB_HORSE
24	181	25.1	137	1	GTH2_ACALA
25	180.5	25.0	141	1	LSHB_CERST
26	178	24.7	128	1	LSHB_PERSU
27	178	24.7	141	1	LSHB_RAT
28	176	24.4	141	1	LSHB_TRIUV
29	175	24.2	126	1	FSHB_PHOSU
30	175	24.2	141	1	FSHB_MOUSE
31	174	24.1	141	1	LSHB_MOUSE
32	173	24.0	138	1	LSHB_PIG
33	172.5	23.9	138	1	LSHB_MACRU
					LSHB_CANFA

34	171	23.7	147	1	TSHB_ANGAN	Q08127 anguilla an
35	167	23.1	129	1	FSHB_CAYVO	Q91k69 cavia porce
36	165	22.9	118	1	LSHB_BATAC	P33088 balaenopter
37	164	22.7	128	1	LSHB-STRA	P80664 struthio ca
38	164	22.7	129	1	FSHB_HUMAN	P01225 homo sapien
39	164	22.7	129	1	FSHB_TRIUV	O46430 trichosurus
40	164	22.6	130	1	FSHB_MOUSE	O60687 mus musculu
41	163.5	22.6	143	1	LSHB_FELCA	P78705 felis silve
42	163	22.6	130	1	FSHB_RAT	P18427 rattus norv
43	162	22.4	129	1	FSHB_PIG	P01228 sus scrofa
44	162	22.4	141	1	LSHB_HUMAN	P01229 homo sapien
45	161	22.3	118	1	LSHB_PHYCA	P25330 physeter ca

## ALIGNMENTS

RESULT 1	ID	GTH2_CLUPA	STANDARD:	PRT:	149 AA.
AC	Q9YGH2				
DT	16-OCT-2001 (Rel. 40, Last sequence update)				
DT	16-OCT-2001 (Rel. 40, Last sequence update)				
DE	Gonadotropin beta-II chain precursor (GTH-II-beta).				
OS	Clupea pallasii (Pacific herring).				
CC	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;				
CC	Actinopterygii; Neopterygii; Teleostei; Clupeomorpha; Clupeidae;				
CC	Clupeinae; Clupea.				
CC	NCBI_TaxID=30724;				
CC	[1]				
RP	SEQUENCE FROM N.A.				
RC	TISSUE=Plutitary;				
RA	Power M.E., Carolisfield J., Wallis G.P., Sherwood N.M.;				
RT	"Isolation and characterization of a cDNA for gonadotropin II-beta of				
RT	Pacific herring, an ancient teleost.";				
RL	J. Fish Biol. 50:315-323(1997).				
CC	-1- FUNCTION: INVOLVED IN GAMETOGENESIS AND STEROIDOGENESIS.				
CC	-1- SUBUNIT: HETERODIMER OF AN ALPHA AND A BETA CHAIN.				
CC	-1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN				
CC	FAMILY.				
CC	-----				
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CC	or send an email to <a href="mailto:license@sib-sib.ch">license@sib-sib.ch</a> ).				
CC	-----				
DR	EMBL: X91984; CAA63038.1; -.				
DR	HSSP; P01233; 1XVL.				
DR	InterPro: IPR000359; Cys_knot.				
DR	InterPro: IPR001545; Glyco_hormone_beta.				
DR	Pfam: PF00007; Cys_knot.1.				
DR	SMART: SM00068; GHB: 1.				
DR	PROSITE: PS00261; GLYCO_HORMONE_BETA_1; 1.				
DR	PROSITE: PS00689; GLYCO_HORMONE_BETA_2; 1.				
KW	Hormone; Glycoprotein; Signal.				
FT	SIGNAL	1	24		POTENTIAL.
FT	CHAIN	25	149		GONADOTROPIN BETA-II CHAIN.
FT	DISULFID	30	78		BY SIMILARITY.
FT	DISULFID	44	93		BY SIMILARITY.
FT	DISULFID	47	131		BY SIMILARITY.
FT	DISULFID	55	109		BY SIMILARITY.
FT	DISULFID	59	111		BY SIMILARITY.
FT	DISULFID	114	121		BY SIMILARITY.
FT	CARBOHYD	34	34		N-LINKED (GLCNAC...)(POTENTIAL).
SO	SEQUENCE	149 AA;	16627 MW;	4585DC6B34367069 CMC64;	

Query Match 29.6%; Score 213.5; DB 1; Length 149;  
Best Local Similarity 38.8%; Pred. No. 3.2e-15;  
Matches 47; Conservative 18; Mismatches 49; Indels 7; Gaps 4;

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QY      10  PMALLTLAGCYGVC--ASSGQILRFECVAVREFFFLAKKPGC-RGLRTITDAGCRRET 66
        |  :||  |||  :||  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
Db       5  PECTILLLLCMCVLAVPACQCFNLP---CVLVNENIVSYEKESGCPCLVFRITICSGRPT 61
        |  :||  |||  :||  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
QY      67  WEKPILEPPYIEAHNRCTYNETKQVTKLPNCAGVDPEFYTPVAIRDCGACSTATTE 126
        |  :|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
Db       62  -KEPYKSPFSFVNVQHVCYGNFRFETIRLPDCAQDVDPVLVTPVALSCGSLCSMDTSD 120
        |  :|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
QY      127 C 127
        |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
Db       121 C 121
        |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

RESULT 2
LSHB_BOVIN  STANDARD:  PRT;  141 AA.
AC  P04651;
DT  13-AUG-1987 (Rel. 05, Created)
DT  01-JAN-1988 (Rel. 06, Last sequence update)
DT  16-OCT-2001 (Rel. 40, Last annotation update)
DE  Lutropin beta chain precursor (luteinizing hormone beta subunit) (LSH-
GN  beta) (LSH-B) (LH-B).
OS  Bos taurus (Bovine).
OC  Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC  Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;
OC  Bovidae; Bovinae; Bos.
OX  NCBI_TaxID=9913;
RN  [1]
RP  SEQUENCE FROM N.A.
RX  MEDLINE=85207729; PubMed=2987241;
RA  Virgin J.B., Silver B.J., Thomson A.R., Nilson J.H.;
RT  "The gene for the beta subunit of bovine luteinizing hormone encodes
RT  a gonadotropin mRNA with an unusually short 5'-untranslated region.";
RL  J. Biol. Chem. 260:7072-7077(1985).
RN  [2]
RP  SEQUENCE FROM N.A.
RX  MEDLINE=85182575; PubMed=383746;
RA  Maurer R.A.;
RT  "Analysis of several bovine lutropin beta subunit cDNAs reveals
RT  heterogeneity in nucleotide sequence.";
RL  J. Biol. Chem. 260:4684-4687(1985).
RN  [3]
RP  SEQUENCE OF 21-139.
RX  MEDLINE=74075724; PubMed=477095;
RA  Maghain-Rogister G., Hennen G.;
RT  "Luteinizing hormone. The primary structures of the beta-subunit from
RT  bovine and porcine species.";
RL  Eur. J. Biochem. 39:235-253(1973).
CC  -1- FUNCTION: PROMOTES SPERMATOGENESIS AND OVULATION BY STIMULATING
CC  THE TESTES AND OVARIES TO SYNTHESIZE SPEROIDS.
CC  -1- SUBUNIT: HETERODIMER OF A COMMON ALPHA CHAIN AND A UNIQUE BETA
CC  CHAIN WHICH CONNERS BIOLOGICAL SPECIFICITY TO THYROTROPIN,
CC  LUTROPIN, FOLLITROPIN AND GONADOTROPIN.
CC  -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN
CC  FAMILY.
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CC  -----
DR  EMBL; M10077; AAA30623.1; -
DR  EMBL; M1506; AAB59267.1; -
DR  PIR; A01499; UTBOB.
DR  HSSP; P01233; 1XUL.
DR  GlycosultEDB; P04651; -
DR  InterPro; IPR000359; Cys_knot.
DR  InterPro; IPR002400; GF_cysknot.

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DR	InterPro: IPR001545; Glyco_hormone_beta.
DR	Pfam: PF00007; Cys_knot_1.
DR	PRINTS: PR00438; GFCYSKNOT.
DR	SMART: SM0068; GHF_1.
DR	PROSITE: PS00261; GLYCO_HORMONE_BETA_1; 1.
DR	PROSITE: PS00689; GLYCO_HORMONE_BETA_2; 1.
KW	Hormone; Signal; Glycoprotein.
FT	SIGNAL 1 20
FT	CHAIN 21 141 LUTROPIN BETA CHAIN.
FT	DISULFID 29 77 BY SIMILARITY.
FT	DISULFID 43 92 BY SIMILARITY.
FT	DISULFID 46 130 BY SIMILARITY.
FT	DISULFID 54 108 BY SIMILARITY.
FT	DISULFID 58 110 BY SIMILARITY.
FT	DISULFID 113 120 BY SIMILARITY.
FT	CARBOHYD 33 33 N-LINKED (GLCNAC. . . ) /FTID-CAR-000044.
FT	CONFLICT 1 2 MISSING (IN REF. 2).
FT	CONFLICT 74 74 Q -> E (IN REF. 3).
FT	CONFLICT 112 112 P -> S (IN REF. 2).
FT	CONFLICT 122 123 GP -> PG (IN REF. 3).
FT	CONFLICT 126 126 Q -> E (IN REF. 3).
SO	SEQUENCE 141 AA; 15202 MW; 44FBICBDA901BC95 CRC64;
Query Match	Best Local Similarity 29.1%; Score 210; DB 1; Length 141;
Matches	48; Conservative 21; Mismatches 46; Indels 10; Gaps 5
OY	6 LFELGALLLLAGVCVCGASSGNRTFYCVCAVREFFLAKRGRGRLGITTTDACWGRC 64
DB	3 MFQGIILLMLLVAG--VWASRGPLRL--COPINATTLAEENACPVCITFTTSICAGC 58
OY	65 ETWEK-PILEPPYLIEAHHRVCTYNETKVTVKLPCNACGVDPFTYTPVALRCGCACST 122
DB	59 PSMKRTEVLPIRPMPQ---RVCTYHELRPAIVRLPGCPGVDPMVSFPALSCHCGPCRL 115
OY	123 ATTEC 127
DB	116 SSTDC 120
RESULT 3	
GTH2_CARAU	STANDARD: PRT; 140 AA.
ID	GTH2_CARAU
AC	098849;
DT	16-OCT-2001 (Rel. 40, Created)
DT	16-OCT-2001 (Rel. 40, Last sequence update)
DT	16-OCT-2001 (Rel. 40, Last annotation update)
DE	Gonadotropin beta-II chain precursor (GTH-II-beta) (lutelinizing hormone-like GTH).
OS	Carassius auratus (goldfish).
OC	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC	Acyinopterygii; Neopterygii; Teleostei; Euteleostei; Ostariophysi;
OC	Cypriniformes; Cyprinidae; Carassius.
RX	NCB1_TaxID=7957;
RN	[1]
RP	SEQUENCE FROM N.A.
RC	TISSUE=Plutitary;
RX	MEDLINE=97242868; PubMed=9073500;
RA	Yoshiura Y., Kobayashi M., Kato Y., Aida K.;
RT	"Molecular cloning of the cDNAs encoding two gonadotropin beta subunits (GTH-I beta and -II beta) from the goldfish, Carassius auratus";
RL	Gen. Comp. Endocrinol. 105:379-389(1997).
RN	[2]
RP	SEQUENCE FROM N.A.
RA	Sohn Y.C., Yoshiura Y., Suetake H., Kobayashi M., Aida K.;
RT	"Nucleotide sequence of gonadotropin II beta subunit gene in goldfish";
RL	Fisheries Sci. 65:800-801(1999).
CC	-I- FUNCTION: INVOLVED IN GAMETOGENESIS AND STEROIDOGENESIS.
CC	-I- SUBUNIT: HETERODIMER OF AN ALPHA AND A BETA CHAIN.
CC	-I- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONS BETA CHAIN

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DR EMBL; D88024; BAA13531.1; -
DR EMBL; AB015596; BAA86658.1; -
DR HSP; P01233; 1XUL.
DR InterPro: IPR000359; Cys_knot.
DR InterPro: IPR002400; GF_cysknot.
DR InterPro: IPR001545; Glyco_hormone_beta.
DR Pfam: PF00007; Cys_knot.1.
DR PRINTS; PR00438; GFCYSKNOT.
DR SMART; SM00068; GHB; 1.
DR PROSITE; PS00261; GLYCO_HORMONE_BETA_1; 1.
DR PROSITE; PS00689; GLYCO_HORMONE_BETA_2; 1.
KW Signal; Hormone; Glycoprotein.
FT SIGNAL 1 23
FT CHAIN 24 140
FT DISULFID 29 77
FT DISULFID 43 92
FT DISULFID 46 130
FT DISULFID 54 108
FT DISULFID 58 110
FT DISULFID 113 120
FT CARBOHYD 33 33
SQ SEQUENCE 140 AA; 1553 MW; 1BE63562979ADFA CRC64;
Query Match 28.9%; Score 209; DB 1; Length 140;
Best Local Similarity 42.5%; Pred. No. 8.7e-15;
Matches 37; Conservative 17; Mismatches 31; Indels 2; Gaps 2;
QY 42 TFLAKKPGC-RGLRITTDACWGRCETWEKPILEPPYIEAHNRVCYNTKQVTVKLPNCA 100
DB 35 TVAAVEKECPKCLVQTTIGSGHCLT-KEPVYKSPFTVYQHVCYRDEVTVKLPDPCP 93
QY 101 PGVDPFYTYPAIRDCGACGACSTATTEC 127
DB 94 PGVDPHITYPALSCDCLCTMDTSDC 120
RESULT 4
GTH2_CYPCA STANDARD; PRT; 144 AA.
ID GTH2_CYPCA
AC P01235;
DT 21-JUL-1986 (Rel. 01, Created)
DT 01-MAY-1992 (Rel. 22, Last sequence update)
DT 16-OCT-2001 (Rel. 40, Last annotation update)
DE Gonadotropin beta-II chain precursor (GTH-II-beta) (luteinizing
DE hormone-like GTH).
OS Cyprinus carpio (Common carp).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Actinopterygii; Neopterygii; Teleostei; Euteleostei; Ostariophysi;
OC Cypriniformes; Cyprinidae; Cyprinus.
OX NCBI_Taxid=7962;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE-89233593; PubMed-3246480;
RA Chang Y.-S., Huang C.-J., Huang F.-L., Lo T.-B.;
RT "Primary structures of carp gonadotropin subunits deduced from cDNA
RT nucleotide sequences.";
RL Int. J. Pept. Protein Res. 32:556-564(1988).
RN [2]
RP SEQUENCE FROM N.A.
RA Chang Y.-S., Huang F.-L., Lo T.-B.;
RL Submitted (MAY-1991) to the EMBL/GenBank/DBJ databases.
RN [3]
RP SEQUENCE OF 28-53 AND 141-142.
```

```
RX MEDLINE=78124308; PubMed=607993;
RA Jolles J., Burzawa-Gerard E., Fontaine Y.-A., Jolles P.;
RT "The evolution of gonadotropins: some molecular data concerning a
RT non-mammalian pituitary gonadotropin, the hormone from a teleost
RT fish (Cyprinus carpio L.).";
RL Biochimie 59:893-898(1977).
CC -1- FUNCTION: INVOLVED IN GAMETOGENESIS AND STEROIDOGENESIS.
CC -1- SUBUNIT: HETERODIMER OF AN ALPHA AND A BETA CHAIN.
CC -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN
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DR EMBL; X59888; CAA42542.1; -
DR EMBL; X59889; CAA42543.1; -
DR PIR; S29677; S29677.
DR PIR; S29678; S29678.
DR PIR; A01504; UTCAB.
DR PIR; J00462; J00462.
DR HSP; P01233; 1XUL.
DR InterPro: IPR000359; Cys_knot.
DR InterPro: IPR002400; GF_cysknot.
DR InterPro: IPR001545; Glyco_hormone_beta.
DR Pfam; PF00007; Cys_knot.1.
DR PRINTS; PR00438; GFCYSKNOT.
DR SMART; SM00068; GHB; 1.
DR PROSITE; PS00261; GLYCO_HORMONE_BETA_1; 1.
DR PROSITE; PS00689; GLYCO_HORMONE_BETA_2; 1.
KW Hormone; Glycoprotein; Signal.
FT SIGNAL 1 27
FT CHAIN 28 142
FT PROPEP 143 144
FT DISULFID 33 81
FT DISULFID 47 96
FT DISULFID 50 134
FT DISULFID 58 112
FT DISULFID 62 114
FT DISULFID 117 124
FT CARBOHYD 37 37
SQ SEQUENCE 144 AA; 16039 MW; 854FE80DA39DCF8 CRC64;
Query Match 28.9%; Score 209; DB 1; Length 144;
Best Local Similarity 42.5%; Pred. No. 8.9e-15;
Matches 37; Conservative 17; Mismatches 31; Indels 2; Gaps 2;
QY 42 TFLAKKPGC-RGLRITTDACWGRCETWEKPILEPPYIEAHNRVCYNTKQVTVKLPNCA 100
DB 39 TVAAVEKECPKCLVQTTIGSGHCLT-KEPVYKSPFTVYQHVCYRDEVTVKLPDPCP 97
QY 101 PGVDPFYTYPAIRDCGACGACSTATTEC 127
DB 98 PGVDPHITYPALSCDCLCTMDTSDC 124
RESULT 5
GTH2_HYPMO STANDARD; PRT; 141 AA.
ID GTH2_HYPMO
AC P37038;
DT 01-JUN-1994 (Rel. 29, Created)
DT 01-JUN-1994 (Rel. 29, Last sequence update)
DT 16-OCT-2001 (Rel. 40, Last annotation update)
DE Gonadotropin beta-II chain precursor (GTH-II-beta) (luteinizing
DE hormone-like GTH).
OS Hypophthalmichthys molitrix (Silver carp).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Actinopterygii; Neopterygii; Teleostei; Ostariophysi;
OC Cypriniformes; Cyprinidae; Hypophthalmichthys.
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OX NCBI_TaxID=13095;
RN [1]
RP SEQUENCE FROM N.A., AND PARTIAL SEQUENCE.
RC TISSUE=pituitary;
RX MEDLINE=90236229; PubMed=2332148;
RA Chang Y.-S., Huang C.J., Huang F.-L., Liu C.S., Lo T.-B.;
RT "Purification, characterization, and molecular cloning of
   gonadotropin subunits of silver carp (Hypophthalmichthys molitrix).";
RL Gen. Comp. Endocrinol. 78:23-33(1990).
CC -1- FUNCTION: INVOLVED IN GAMETOGENESIS AND STEROIDOGENESIS.
CC -1- SUBUNIT: HETERODIMER OF AN ALPHA AND A BETA CHAIN.
CC -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN
CC FAMILY.
DR PIR: B60626; B60626.
DR HSSP: P01233; 1XUL.
DR InterPro: IPR000359; Cys_knot.
DR InterPro: IPR002400; GF_cys_knot.
DR InterPro: IPR001545; Glyco_hormone_beta.
DR Pfam: PF00007; Cys_knot_1.
DR PRINTS: PR00438; GF_CYS_KNOT.
DR SMART: SM00068; GHb_1.
DR PROSITE: PS00261; GLYCO_HORMONE_BETA_1; 1.
DR PROSITE: PS00689; GLYCO_HORMONE_BETA_2; 1.
KW Hormone; Glycoprotein; Signal.
FT SIGNAL 1 24
FT CHAIN 25 139 GONADOTROPIN BETA-II CHAIN.
FT PROPEP 140 141
FT DISULFID 30 78 BY SIMILARITY.
FT DISULFID 44 93 BY SIMILARITY.
FT DISULFID 47 131 BY SIMILARITY.
FT DISULFID 55 109 BY SIMILARITY.
FT DISULFID 59 111 BY SIMILARITY.
FT DISULFID 114 121 BY SIMILARITY.
FT CAROHND 34 34 N-LINKED (GLCNAC...)(POTENTIAL).
SQ SEQUENCE 141 AA; 15856 MW; A42C48FE983EEA46 CRC64;

Query Match 28.7%; Score 207; DB 1; Length 141;
Best Local Similarity 42.5%; Pred. No. 1.4e-14;
Matches 37; Conservative 16; Mismatches 32; Indels 2; Gaps 2;

OY 42 TFLAKKPGC-RGLRITTDACWGRCEWEKPILEPPIEAHHRCVTNENKQVTKLPNCA 100
Db 36 TVAVEKEGCPKCLVFQTTICSHGLT-KRPVYKSPSTVYQHVCYRDVYETVRLPDCP 94
OY 101 PGVDPFYTPVAIRCDGACSTATTEC 127
Db 95 PGVDPHITYPVALSCDCSCLTMDTSDC 121

RESULT 6
ID GTH2_CTEID STANDARD; PRT; 146 AA.
AC P30984;
DR 01-JUL-1993 (rel. 26, Last Created)
DR 01-JUL-1993 (rel. 26, Last sequence update)
DR 16-OCT-2001 (rel. 40, Last annotation update)
DE Gonadotropin beta-II chain precursor (GTH-II-beta) (Luteinizing
   hormone-like GTH) (Fragment).
OS Ctenopharyngodon idella (Grass carp).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Actinopterygii; Neopterygii; Teleostei; Euteleostei; Ostariophysi;
OC Cypriniformes; Cyprinidae; Ctenopharyngodon.
OX NCBI_TaxID=7959;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=pituitary;
RA Chang Y.-S., Huang F.-L., Lo T.-B.;
RL Submitted (Jul-1991) to the EMBL/GenBank/DBD databases.
CC -1- FUNCTION: INVOLVED IN GAMETOGENESIS AND STEROIDOGENESIS.
CC -1- SUBUNIT: HETERODIMER OF AN ALPHA AND A BETA CHAIN.
CC -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN
CC FAMILY.
CC -----
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CC or send an email to license@isb-sib.ch).
CC -----
DR EMBL: X61051; CAA43385.1; -.
DR PIR: S16763; S16763.
DR HSSP: P01233; 1XUL.
DR InterPro: IPR000359; Cys_knot.
DR InterPro: IPR001545; Glyco_hormone_beta.
DR Pfam: PF00007; Cys_knot_1.
DR SMART: SM00068; GHb_1.
DR PROSITE: PS00261; GLYCO_HORMONE_BETA_1; 1.
DR PROSITE: PS00689; GLYCO_HORMONE_BETA_2; 1.
KW Hormone; Glycoprotein; Signal.
FT SIGNAL 1 28
FT CHAIN 29 146 GONADOTROPIN BETA-II CHAIN.
FT DISULFID 35 83 BY SIMILARITY.
FT DISULFID 49 98 BY SIMILARITY.
FT DISULFID 52 136 BY SIMILARITY.
FT DISULFID 60 114 BY SIMILARITY.
FT DISULFID 64 116 BY SIMILARITY.
FT DISULFID 119 126 BY SIMILARITY.
FT CAROHND 39 39 N-LINKED (GLCNAC...)(POTENTIAL).
SQ SEQUENCE 146 AA; 16320 MW; 65173444AC678082 CRC64;

Query Match 28.7%; Score 207; DB 1; Length 146;
Best Local Similarity 42.5%; Pred. No. 1.5e-14;
Matches 37; Conservative 16; Mismatches 32; Indels 2; Gaps 2;

OY 42 TFLAKKPGC-RGLRITTDACWGRCEWEKPILEPPIEAHHRCVTNENKQVTKLPNCA 100
Db 41 TVAVEKEGCPKCLVFQTTICSHGLT-KRPVYKSPSTVYQHVCYRDVYETVRLPDCP 99
OY 101 PGVDPFYTPVAIRCDGACSTATTEC 127
Db 100 PGVDPHITYPVALSCDCSCLTMDTSDC 126

RESULT 7
ID GTH2_CLAGA STANDARD; PRT; 138 AA.
AC P53543;
DR 01-OCT-1996 (rel. 34, Last Created)
DR 01-OCT-1996 (rel. 34, Last sequence update)
DR 16-OCT-2001 (rel. 40, Last annotation update)
DE Gonadotropin beta-II chain precursor (GTH-II-beta).
OS Clarias gariepinus (Sharptooth catfish) (African catfish).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Actinopterygii; Neopterygii; Teleostei; Euteleostei; Ostariophysi;
OC Siluriformes; Clariidae; Clarias.
OX NCBI_TaxID=13013;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=pituitary;
RA Rebers F.E.M., Tensen C.P., Schulz R.W., Goos H.J.T., Bogerd J.;
RL Submitted (May-1996) to the EMBL/GenBank/DBD databases.
RN [2]
RP SEQUENCE OF 22-138.
RC TISSUE=pituitary;
RX MEDLINE=93051153; PubMed=1426937;
RA Koide Y., Noso T., Schouten G., Peute J., Zandbergen M.A., Bogerd J.,
   Schulz R.W., Kawachi H., Goos H.J.;
RT "Maturational gonadotropin from the African catfish, Clarias
   gariepinus: purification, characterization, localization, and
   RT biological activity";
RL Gen. Comp. Endocrinol. 87:327-341(1991).
CC -1- FUNCTION: INVOLVED IN GAMETOGENESIS AND STEROIDOGENESIS.
CC -1- SUBUNIT: HETERODIMER OF AN ALPHA AND A BETA CHAIN.
CC -----
```

CC -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN  
 CC FAMILY.  
 CC -----  
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 CC -----  
 DR EMBL; X97761; CAA66359.1; -  
 DR HSBP; P01233; 1XUL.  
 DR InterPro: IPR000359; Cys\_knot.  
 DR InterPro: IPR001545; Glyco\_hormone\_beta.  
 DR Pfam; PF00007; Cys\_knot; 1.  
 DR SMART; SM00068; GHb; 1.  
 DR PROSITE; PS00261; GLYCO\_HORMONE\_BETA\_1; 1.  
 DR PROSITE; PS00689; GLYCO\_HORMONE\_BETA\_2; 1.  
 KW Hormone; Glycoprotein; signal.  
 FT SIGNAL 1 21  
 FT CHAIN 22 138 GONADOTROPIN BETA-II CHAIN.  
 FT DISULFID 27 75 BY SIMILARITY.  
 FT DISULFID 41 90 BY SIMILARITY.  
 FT DISULFID 44 128 BY SIMILARITY.  
 FT DISULFID 52 106 BY SIMILARITY.  
 FT DISULFID 56 108 BY SIMILARITY.  
 FT DISULFID 111 118 BY SIMILARITY.  
 FT CARBOHYD 31 31 N-LINKED (GLCNAC. . .) (POTENTIAL).  
 SQ SEQUENCE 138 AA; 15772 MW; 670D81FAFAC6880E CRC64;  
 Query Match 28.3%; Score 204; DB 1; Length 138;  
 Best Local Similarity 40.2%; Pred. No. 2.8e-14;  
 Matches 33; Conservative 18; Mismatches 32; Indels 2; Gaps 2;  
 QY 42 TFLAKKRGCG-RLGRITTDACWGRCETWEKPLEPPYIEAHHRVCTYNETKQVTKLPNCA 100  
 DB 33 TVSEVKDCGCPCLAFQGTSGHCFE-KEPYKSPFSSIVGHVCTYRVRETIRLPDCR 91  
 QY 101 PGVDPFTYTPAIRDCGACGACSTATTEC 127  
 DB 92 PGVDPHYTPVALSCESLCTMDPSDC 118  
 RESULT 8  
 LSHB\_SHEEP STANDARD; PRT; 141 AA.  
 ID LSHB\_SHEEP  
 AC P01231;  
 DT 21-JUL-1986 (Rel. 01, Created)  
 DT 01-NOV-1995 (Rel. 32, Last sequence update)  
 DT 16-OCT-2001 (Rel. 40, Last annotation update)  
 DE Lutropin beta chain precursor (luteinizing hormone beta subunit) (LSH-  
 DE beta) (LSH-B) (LH-B) (interstitial cell stimulating hormone).  
 GN LHB.  
 OS Ovis aries (Sheep).  
 OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
 OC Mammalia; Eutheria; Cetartiodactyla; Ruminantia; Pecora; Bovidae;  
 OC Bovidae; Caprinae; Ovis.  
 OC NCBI\_taxid=9940;  
 OX 11  
 RN SEQUENCE FROM N.A.  
 RX MEDLINE=93351742; PubMed=8349025.  
 RA Brown P., McNeilly J.R., Wallace R.M., McNeilly A.S., Clark A.J.;  
 RT "Characterization of the ovine LH beta-subunit gene: the promoter  
 RT directs gonadotrope-specific expression in transgenic mice.";  
 RL Mol. Cell. Endocrinol. 93:157-165(1993).  
 RN 121  
 RC SEQUENCE FROM N.A.  
 RC TISSUE=pituitary;  
 RX MEDLINE=90245669; PubMed=2336396;  
 RA D'Angelo-Bernard G., Mounai M., Julisz M., Counis R.;  
 RT "Cloning and sequence analysis of the cDNA for the precursor of the  
 RT beta subunit of ovine luteinizing hormone.";

RL Nucleic Acids Res. 18:2175-2175(1990).  
 RN 131  
 RP SEQUENCE OF 21-139.  
 RX MEDLINE=72211145; PubMed=4556309;  
 RA Liu W.-K., Nahm H.S., Sweeney C.M., Holcomb G.N., Ward D.N.;  
 RT "The primary structure of ovine luteinizing hormone. II. The amino  
 RT acid sequence of the reduced, S-carboxymethylated A-subunit (LH-  
 RT beta).";  
 RL J. Biol. Chem. 247:4365-4381(1972).  
 RN 141  
 RP SEQUENCE OF 21-139.  
 RX MEDLINE=73190035; PubMed=4575435;  
 RA Sairam M.R., Samy T.S.A., Pakkoff H., Li C.H.;  
 RT "The primary structure of ovine interstitial cell-stimulating  
 RT hormone. II. The beta-subunit.";  
 RL Arch. Biochem. Biophys. 153:572-586(1972).  
 RN 151  
 RP PRELIMINARY ASSIGNMENT OF DISULFIDE BONDS.  
 RX MEDLINE=76068152; PubMed=1201911;  
 RA Chung D., Sairam M.R., Li C.H.;  
 RT "The primary structure of ovine interstitial cell stimulating  
 RT hormone. IV: Disulfide bridges of the beta subunit.";  
 RL Int. J. Pept. Protein Res. 7:487-493(1975).  
 RN 161  
 RP STRUCTURE OF CARBOHYDRATE.  
 RX MEDLINE=91061170; PubMed=2209620;  
 RA Weisshar G., Hiyana J., Renwick A.G.C.;  
 RT "Site-specific N-glycosylation of ovine lutropin. Structural analysis  
 RT by one- and two-dimensional 1H-NMR spectroscopy.";  
 RL Eur. J. Biochem. 192:741-751(1990).  
 CC -1- FUNCTION: PROMOTES SPERMATOGENESIS AND OVULATION BY STIMULATING  
 CC THE TESTES AND OVARIES TO SYNTHESIZE STEROIDS.  
 CC -1- SUBUNIT: HETERODIMER OF A COMMON ALPHA CHAIN AND A UNIQUE BETA  
 CC CHAIN WHICH CONFERES BIOLOGICAL SPECIFICITY TO THYROTROPIN,  
 CC LUTROPIN, FOLLITROPIN AND GONADOTROPIN.  
 CC -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN  
 CC FAMILY.  
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 CC -----  
 DR EMBL; S64695; AAB27819.1; -  
 DR EMBL; X52488; CAA36729.1; -  
 DR PIR; A01500; UTSHB.  
 DR PIR; S09232; S09232.  
 DR HSBP; P01233; 1XUL.  
 DR GLYCOSULEDB; P01231; -  
 DR InterPro: IPR000359; Cys\_knot.  
 DR InterPro: IPR002400; GF\_cysknot.  
 DR InterPro: IPR001545; Glyco\_hormone\_beta.  
 DR Pfam; PF00007; Cys\_knot; 1.  
 DR PRINTS; PR00438; GRCYSKNOT.  
 DR SMART; SM00068; GHb; 1.  
 DR PROSITE; PS00261; GLYCO\_HORMONE\_BETA\_1; 1.  
 DR PROSITE; PS00689; GLYCO\_HORMONE\_BETA\_2; 1.  
 KW Hormone; signal; Glycoprotein.  
 FT SIGNAL 1 20  
 FT CHAIN 21 141 LUTROPIN BETA CHAIN.  
 FT DISULFID 29 77 BY SIMILARITY.  
 FT DISULFID 43 92 BY SIMILARITY.  
 FT DISULFID 46 130 BY SIMILARITY.  
 FT DISULFID 54 108 BY SIMILARITY.  
 FT DISULFID 58 110 BY SIMILARITY.  
 FT DISULFID 113 120 BY SIMILARITY.  
 FT MOD\_RES 21 21 BLOCKED.  
 FT CARBOHYD 33 33 N-LINKED (GLCNAC. . .).  
 FT VARIANT 138 141 MISSING (IN SOME MOLECULES).  
 FT



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FT DISULFID 29 77 BY SIMILARITY.
FT DISULFID 43 92 BY SIMILARITY.
FT DISULFID 46 130 BY SIMILARITY.
FT DISULFID 54 108 BY SIMILARITY.
FT DISULFID 58 110 BY SIMILARITY.
FT DISULFID 113 120 BY SIMILARITY.
FT CARBOHYD 33 73 N-LINKED (GLCNAC. . .).
FT VARIANT 73 73 Y -> I.
FT VARIANT 86 86 T -> K.
SQ SEQUENCE 142 AA: 15872 MW: E31E117DA235C486 CRC64:

Query Match
Best Local Similarity 27.8%; Score 201; DB 1; Length 142;
Matches 42; Conservative 19; Mismatches 44; Indels 16; Gaps 3;

QY 22 VLGASSGMLRTFVGCAYNE-----FTFLAKKPGC-RGLRTTDDACMGRCET 66
Db 1 MGLHVTGLISLFLCTILEPEVSGSIMOPCQPINQTVLSLEKCGCPCLVIGPFGICSGHCYT 60
QY 67 WEKPILEPPYTEAHHRVCTYNFTKOVTKVLPNCAGVDPFVYTPVAIRCDGACSTATTTC 126
Db 61 KEPEFKSPFTVYVQHVCTYRDVRYETRLPDCPPWVDEPHVTPVALSCDCSLCNMDTSD 119
QY 127 C 127
Db 120 C 120

RESULT 11
GTH2_FUNHE
ID GTH2_FUNHE STANDARD: PRT; 136 AA.
AC P30972:
DT 01-JUL-1993 (Rel. 26, Created)
DT 01-JUL-1993 (Rel. 26, Last sequence update)
DT 16-OCT-2001 (Rel. 40, Last annotation update)
DE Gonadotropin beta-II chain precursor (GTH-II-beta).
OS Fundulus heteroclitus (Killifish) (Mummichog).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Actinopterygii; Neopterygii; Teleostei; Euteleostei; Neoteleostei;
OC Acanthomorpha; Acanthopterygii; Percomorpha; Atherinomorpha;
OC Cyprinodontiformes; Fundulidae; Fundulus.
OX NCBI_TaxID=8078;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=pituitary;
RA MEDLINE=92405806; PubMed=1526312;
RL Lin Y.-W.P., Rupnow B.A., Price D.A., Greenberg R.M., Wallace R.A.;
RT "Fundulus heteroclitus gonadotropins. 3. Cloning and sequencing of
RT gonadotropic hormone (GTH) I and II beta-subunits using the
RT polymerase chain reaction.";
RL Mol. Cell. Endocrinol. 85:127-139(1992).
CC -1- FUNCTION: INVOLVED IN GAMETOGENESIS AND STEROIDOGENESIS.
CC -1- SUBUNIT: HETERODIMER OF AN ALPHA AND A BETA CHAIN.
CC -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN
CC FAMILY.
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CC -----
CC EMBL; M87015; AAB59963.1; -.
CC HSSP; P01233; 1XUL.
CC InterPro: IPR000359; Cys_knot.
CC InterPro: IPR002400; GF_cysknot.
CC InterPro: IPR001545; Glyco_hormone_beta.
CC Pfam; PF00007; Cys_knot; 1.
CC PRINTS; PR00438; GFCYSKNOT.
CC SMART; SM00068; GHB; 1.
CC PROSITE; PS00261; GLYCO_HORMONE_BETA_1; 1.

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DR PROSITE; PS00689; GLYCO_HORMONE_BETA_2; 1.
FT SIGNAL 1 21
FT CHAIN 22 136
FT DISULFID 27 75 GONADOTROPIN BETA-II CHAIN.
FT DISULFID 41 90 BY SIMILARITY.
FT DISULFID 44 128 BY SIMILARITY.
FT DISULFID 52 106 BY SIMILARITY.
FT DISULFID 56 108 BY SIMILARITY.
FT DISULFID 111 118 BY SIMILARITY.
FT CARBOHYD 31 31 N-LINKED (GLCNAC. . .) (POTENTIAL).
SQ SEQUENCE 136 AA: 15016 MW: 716576844A6A1653 CRC64:

Query Match
Best Local Similarity 27.6%; Score 199; DB 1; Length 136;
Matches 39; Conservative 12; Mismatches 40; Indels 2; Gaps 2;

QY 36 CAVREFTFLAKKPGCGRL-RITTDACWRCGFEMERPIEPAHHRVCTYNFTKOVTV 94
Db 27 COLLNQTLSLEKRGSGCHRVETTTCSGYCAT-KDPNFKTSYKMAIQHVCTYGDLYKTF 85
QY 95 KLPNCAPGVDPFTYTPVAIRCDGACSTATTTC 127
Db 86 EFPECVPGVDPVTVTPVALSCRCGCGAMATSDC 118

RESULT 12
GTHB_MURCI
ID GTHB_MURCI STANDARD: PRT; 113 AA.
AC P12837:
DT 01-OCT-1989 (Rel. 12, Created)
DT 01-OCT-1989 (Rel. 12, Last sequence update)
DT 15-JUL-1999 (Rel. 38, Last annotation update)
DE Gonadotropin beta chain.
OS Murresox cinereus (Pike eel) (daggertooth pike conger).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Actinopterygii; Neopterygii; Teleostei; Anguilliformes; Congridae;
OC Murresocidae; Murresox.
OX NCBI_TaxID=7946;
RN [1]
RP SEQUENCE.
RC TISSUE=pituitary;
RX MEDLINE=90092087; PubMed=2598923;
RA Liu C.-S., Huang F.-L., Chang Y.-S., Lo T.-B.;
RT "Pike eel (Murresox cinereus) gonadotropin. Amino acid sequences of
RT both alpha and beta subunits.";
RL Eur. J. Biochem. 186:105-114(1989).
CC -1- FUNCTION: INVOLVED IN GAMETOGENESIS AND STEROIDOGENESIS.
CC -1- SUBUNIT: HETERODIMER OF AN ALPHA AND A BETA CHAIN.
CC -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN
CC FAMILY.
CC -----
CC PIR; S07092; S07092.
CC HSSP; P01233; 1XUL.
CC InterPro: IPR000359; Cys_knot.
CC InterPro: IPR002400; GF_cysknot.
CC InterPro: IPR001545; Glyco_hormone_beta.
CC Pfam; PF00007; Cys_knot; 1.
CC PRINTS; PR00438; GFCYSKNOT.
CC SMART; SM00068; GHB; 1.
CC PROSITE; PS00261; GLYCO_HORMONE_BETA_1; 1.
CC PROSITE; PS00689; GLYCO_HORMONE_BETA_2; 1.
CC Hormone: Glycoprotein.
FT DISULFID 6 54 BY SIMILARITY.
FT DISULFID 20 69 BY SIMILARITY.
FT DISULFID 23 107 BY SIMILARITY.
FT DISULFID 31 85 BY SIMILARITY.
FT DISULFID 35 87 BY SIMILARITY.
FT DISULFID 90 97 BY SIMILARITY.
FT CARBOHYD 10 10 N-LINKED (GLCNAC. . .).
SQ SEQUENCE 113 AA: 12582 MW: 17DDDADE6AC6A6F7 CRC64:

Query Match
Best Local Similarity 27.4%; Score 198; DB 1; Length 113;
Matches 42.5%; Pred. No. 9.6e-14;

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RA      Kato Y., Gen K., Maruyama O., Tomizawa K., Kato T.;
RT      "Molecular cloning of cDNAs encoding two gonadotropin beta subunits
        (GTH-I beta and -II beta) from the masu salmon, Oncorhynchus masou;
        rapid divergence of the GTH-I beta gene.";
RL      J. Mol. Endocrinol. 11:275-282(1993).
CC      -1- FUNCTION: INVOLVED IN GAMETOGENESIS AND STEROIDOGENESIS.
CC      -1- SUBUNIT: HETERODIMER OF AN ALPHA AND A BETA CHAIN.
CC      -1- SIMILARITY: BELONGS TO THE GLYCOPROTEIN HORMONES BETA CHAIN
        FAMILY.
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CC      -----
DR      EMBL; S69276; AAB30424.1; -.
DR      HSPSP; P01233; 1XUL.
DR      Interpro: IPR000359; Cys_knot.
DR      Interpro: IPR002400; GF_cysknot.
DR      Interpro: IPR001545; Glyco_hormone_beta.
DR      Pfam; PF00007; Cys_knot; 1.
DR      PRINTS; PR00438; GFCYSKNOT.
DR      SMART; SM00068; GHB; 1.
DR      PROSITE; PS00261; GLYCO_HORMONE_BETA_1; 1.
DR      PROSITE; PS00689; GLYCO_HORMONE_BETA_2; 1.
KW      Hormone; Glycoprotein; Signal.
FT      CHAIN          1         23         BY SIMILARITY.
FT      SIGNAL         1         23         GONADOTROPIN BETA-II CHAIN.
FT      DISULFID        29         77         BY SIMILARITY.
FT      DISULFID        43         92         BY SIMILARITY.
FT      DISULFID        46         130        BY SIMILARITY.
FT      DISULFID        54         108        BY SIMILARITY.
FT      DISULFID        58         110        BY SIMILARITY.
FT      DISULFID        113        120        BY SIMILARITY.
FT      CARBOHYD        33         33         N-LINKED (GLCNAC... ) (POTENTIAL).
SQ      SEQUENCE      142 AA; 15684 MW; 70A3906EAEAB3FEF CMC64;

Query Match          26.6%; Score 192; DB 1; Length 142;
Best Local Similarity 33.9%; Pred. No. 5e-13;
Matches 41; Conservative 18; Mismatches 46; Indels 16; Gaps 3;

Oy      22 VLGASSGNLRFVGCAYVE-----PFLAKKPGC-RGLRITTDACGRCEI 66
Db      1 MLGHGVLISLILPEVGSIMOPCPINOTVSLKRCPCPLVITPISGHCIT 60
Oy      67 WEKPILEPPYLEAHNRVCTYNETKQVTLKNCAGVDFPYTVPAIRCDCGACSTATTE 126
Db      61 -KEPFRSFPSTYVQVHCVTYRDVREYEMIRLDPCCPMWDPHVTYYPVALSCDCLCMMDTSD 119
Oy      127 C 127
Db      120 C 120

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Search completed: October 11, 2002, 08:23:07  
Job time : 11 secs

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